

HYPERION AC/DC EOS0606iAD-C USER'S MANUAL

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EOS 0606i AC/DC Special Features (rev "C")

- *Use AC 100V~240V at home OR DC 11V~15V anywhere
- *Powerful, yet compact and portable with wide support for battery types
- *Integrated Hyperion LBA Balancer for LiPo (3.7v) and LiFe (3.3v) based cells
- *Balance Multi-Adapters for 2S~6S packs inc. (Hyperion and XH Types)
- *Charge, Discharge, and STORAGE Modes (and Cycling for NiMH and NiCd)
- *Clear Yellow Backlit LCD Screen, Warnings for common setup errors
- *Packaged in a rugged case, with Long Input leads
- *Option multi-connectors for common pack brands are also available (see details end of document)



Specifications

Input voltage range	11.0-15.0V DC <u>OR</u> 100~240V AC at 50~60 Hz Only ONE source may be connected at a time!
Appropriate battery types and range of series-connected cells	1-14 NiCd – Nickel-Cadmium cells
	1-14 NiMH – Nickel-Metal Hydride cells
	1-6 LiPo – Lithium Polymer cells, 100~20,000mAh (3.7V/cell type only)
	1-6 LiFe – Lithium Iron (3.3V/cell types , inc. A123 brand cells / LiFePO4 cells)
	1-6 Lead-Acid cells (2V per cell nominal)
Charge current	0.1A ~ 6.0A MAX, by 50mA steps for Lipo and LiFePO4 / 100mA steps for NiCdd, NiMH and Lead-Acid (50W limit)
Discharge current	0.1A ~ 1.0A MAX, by 10mA steps (5W limit)
Trickle charge current (NiCd, NiMH)	0 ~ 200mA
Charge termination	"Delta V" peak detection for NiCd/NiMH
	"CV/CC" for Lithium and Lead-Acid Batteries
Cycling Modes (NiCd, NiMH)	Charge>Discharge or Discharge>Charge
Display type	2-line, 16 character high-visibility yellow backlit LCD

Safety precautions

- **KEEP CHARGER and BATTERIES AWAY FROM CHILDREN AND PETS AT ALL TIMES!**
- **This charger is ONLY for NiCd/NiMH, Lithium (3.7V/cell), A123 (3.3V/cell), and Lead-Acid (2.0V/cell) type cells. DO NOT connect others, such as 3.6V/cell Lithium-Ion, or non-rechargeable batteries!**
- **Always place the charger on a firm, level, and fireproof surface for charging**
- **Do not place the battery or charger on or near flammable materials while in use:**
Keep away from carpets, cluttered workbenches, etc
- **Do not exceed cell manufacturer's suggested max charge rates**
- **Do not use automotive type battery chargers to power the charger**
- **Do not leave the charger unattended while charging**
- **Do not allow water, moisture or foreign objects into the charger**
- **Do not open the charger, nor attempt any repair as it is dangerous and will void your warranty**
- **Do not obstruct the air intake or outlet holes on the charger**
- **ALWAYS follow correct connection sequence, as given below**
- **CAREFULLY FOLLOW THE BATTERY PACK MAKER'S RECOMMENDATIONS AND SAFETY ADVICE!**

HIGH RISK CHARGING ADVISORY

Avoid charging batteries indoors. If you must charge indoors – or any place injury to persons or damage could result in the event of fire – then be sure to:

- * Keep battery well away from flammables (2 meters or more)
- * Contain battery in a heavy fireproof container (such as a brick box)
- * Always monitor the charge

HYPERION ACCEPTS NO RESPONSIBILITY FOR DAMAGE OR INJURY during INDOOR or other HIGH RISK CHARGING ACTIVITY

Initial Setup

The EOS 0606i requires 4mm Bullet Connectors (aka Banana Plugs) on 12awg wire leads for output harness between charger and battery main wires. Harness wire leads should never exceed 20cm in length. Pre-assembled output harnesses are available under Hyperion Part #HP-EOSOUTCORD, and one harness is included with each charger. Solder your chosen battery-side connector to the bare wire ends of the harness, taking great care to observe proper polarity.

If, after carefully reading the following pages on usage, you have any difficulty using the charger please refer to the final pages for troubleshooting guide and warranty terms. It is well to carefully check your charger before making a return, as problems in setup, cabling, or power supply are much more common than defects in the charger. Chargers returned by the user and later found not defective will only be returned to the user at the user's expense and may incur a service charge.

ALWAYS FOLLOW this connection sequence, and reverse sequence to disconnect:

- 1) Connect OUTPUT harness 4mm plugs to the sockets located on the right side of the charger. Take care that the Output Harness RED wire bullet connector goes to the (+) socket, and BLACK wire to (-) .
 - 2a) Connect Charger INPUT alligator clips to an appropriate DC power source:
 - a) A 12V automobile battery
 - b) A quality, low-noise DC power supply of 12~15V with 5A+ rating (large batteries may require 10A supply)
- OR**
- 2b) Connect to AC wall power 100~240V using the supplied AC cable

DO NOT CONNECT BOTH AC AND DC INPUT AT THE SAME TIME!!

The Charger will display INPUT VOLTAGE error message if input voltage is out of range. If this happens, please recheck the input power supply to make sure correct voltage of 11V to 15V is present.

- 3) Set the battery type using the charger configuration buttons.

*The **INC** and **DEC** buttons are used to **Increase** or **Decrease** values, such as Charge Current or Cell Count

*The **INC** and **DEC** buttons are also used to select **MODE**, such as Charge, Discharge, Store, or Cycle.

*The **BATT TYPE** and **ENTER** buttons both have two modes: SHORT press or LONG (~1 second) press

- Short press **BATT TYPE**: Scroll battery **types** (NiCd > NiMH > LiPo > LiFe > Pb)
- Long press **BATT TYPE**: View input/output Data
- Short press **ENTER**: Scroll **settings** for a battery type. Values will blink when selected. Blinking will stop after a few seconds if you do not make a change. Short press Enter to re-select a setting to change. Short press BATT TYPE to re-select Battery Type, then INC/DEC to change values.
- Long press **ENTER**: START/STOP charging (or discharging, or cycling, etc)

Let's start by using a NiMh battery as an example.

When the charger is first connected to input power, it will display the previously used battery configuration. This is especially convenient if you often charge the same type of battery.

- 1) If **NiMh** is not shown, short push the **BATT TYPE** button to scroll through all battery types. Stop when you reach **NiMh**.
- 2) Short press the **ENTER** button to select "C", charge rate in Ampere
- 3) Press INC or DEC buttons to choose the proper rate for your battery pack.
Charging NiCd and NiMH is mostly automatic, and the setup routines are the same for both. You only need to consult the documentation for your battery pack (or ask your dealer) to determine the proper charge current in Ampere (A). If the rate is given in mA, note that 100mA equals 0.1A: so 900mA would be 0.9A, for example.
- 4) Attach your NiMH battery to the EOS 0606i Output side harness, checking that +/- polarity is correct.
- 5) **LONG press the ENTER** button (hold down for about 1~2 seconds) to begin charging
NO BATTERY error – if battery not connected
OPEN CIRCUIT error – if the battery becomes disconnected from the charger after START
REVERSE POLARITY error – if the battery is connected in reverse

In our NiMH charging example above, we pressed the **ENTER** button when "**NiMH**" was blinking, to go directly to charge rate setting. However, if you want to enter **DISCHARGE** or **CYCLE** modes, you can press the **BATT TYPE** button to start **NiMH** blinking, then press **INC/DEC** buttons to scroll through the various modes. Once the mode is settled (like **CYCLE**), short press **ENTER** to start values blinking for editing.

Lithium Care

Whenever Lithium battery charging is started with Balancer properly connected, the display will show: **BALANCER CONN. CONNECTED**. If you see instead **BALANCER CONN. NOT CONNECTED**, stop and check your connections carefully, and repair or replace if needed. We strongly recommend balance charging for LiPo and LiFe packs at all times.

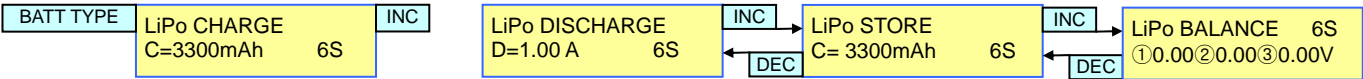
To maximize your investment in Lithium Battery packs, do the following:

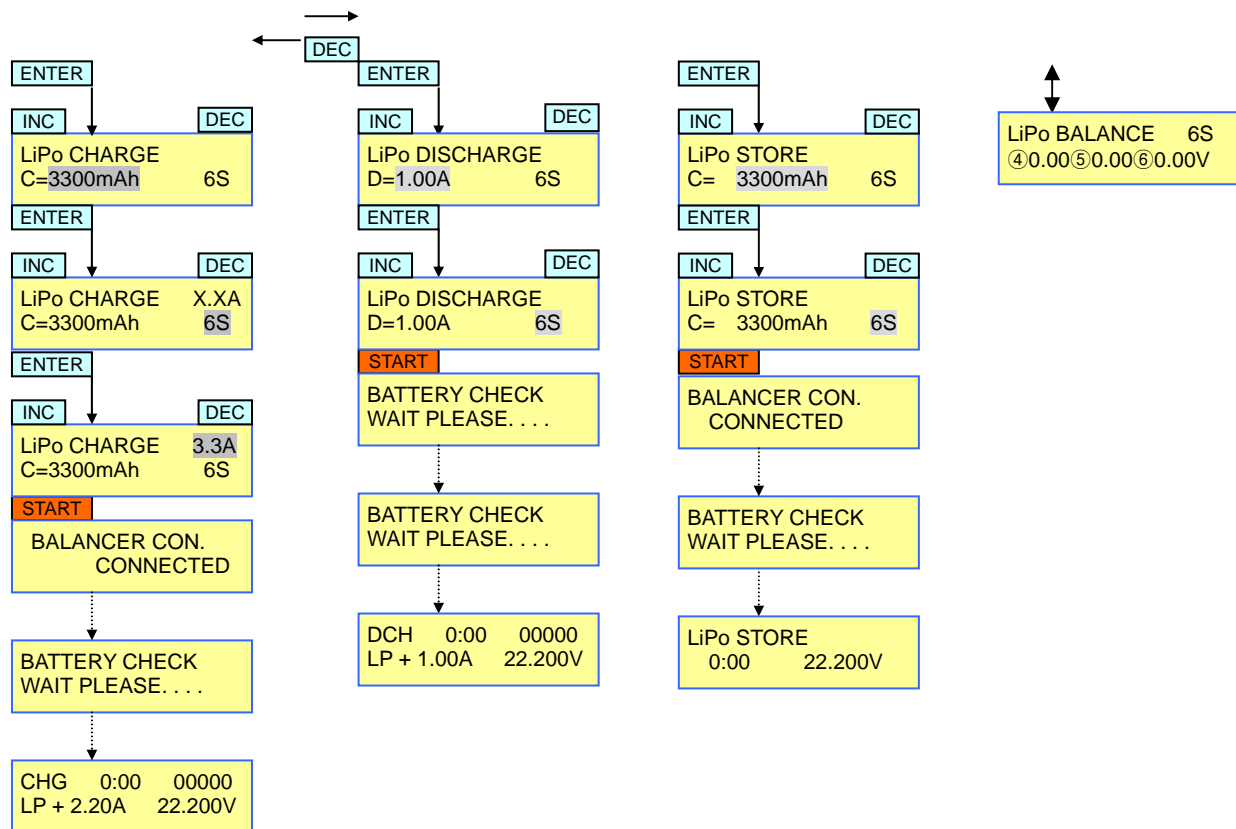
- ALWAYS Store your packs at 55~65% of capacity. After a day of flying, use STORE Mode to achieve this. It is especially harmful to store lithium packs fully charged, and should be avoided for more than a week at most.
- AVOID discharging cells beyond 90% of capacity. NEVER fully discharge lithium packs.
- KEEP your packs in a cool, dry location whenever in storage.

Note: The EOS0606i does not support charging of legacy 3.6v Lithium Ion cell types. Never attempt to charge these cells, under any circumstances, using this charger.

LITHIUM POLYMER/ION MODE (for 3.7V/cell types only!)

Number of LiPo Cells Wired in Series (Pack Voltage)					
1S	2S	3S	4S	5S	6S
3.7V	7.4V	11.1V	14.8V	18.5V	22.2V





LiPo CHARGE 2.1A
C=2100mAh 3S

Setting LiPo/Life battery capacity (2100mAh 3S pack example)

Adjust and set the correct battery capacity from 100mAh to 20000mAh with INC & DEC buttons (50mAh per step). Press the ENTER button to confirm setting. Charge rate is set on the basis of selected capacity, at 1C rate. Example: Li-Po cell of 1500mAh capacity: 1C = 1500mA (= 1.5A).

LiPo CHARGE 2.1A
C=2100mAh 3S

Setting Battery Voltage / Number of Cells in Series for LiPo/Life battery packs

Select the total battery voltage in "S" to be charged with ENTER, INC & DEC buttons.

LiPo CHARGE 2.1A
C=2100mAh 3S

Setting Charge Rate (Amps)

By default, this field will be filled out with a 1C charge rate, based on the capacity of your pack set previously. If you do not know the manufacturers max allowed charge rate, do not change this default setting. Capacity mAh / 1000 = Ah, so a 2100 mAh pack at 1C = 2.1A, 2C=2.4A, etc.

LiPo DISCHARGE
D=1.00 A 3S

Setting discharge parameters

Adjust to the desired discharge current from 0.10A to 1.00A (0.01A per step) with INC & DEC button. Press the ENTER button to confirm setting. Set pack voltage, 1S~6S as in charging example above. Autocut occurs automatically at 3.5V per cell for Lipo and 2.9V for LiFe. **We do NOT recommend using the lithium discharge function** unless you have a very compelling reason and you are an advanced user. Use only STORE MODE if you want to store your pack.

LiFe MODE [LiFePO4, A123]

The LiFe LiFePO4 charge/discharge modes are intended for cells with 3.3V nominal produced by Hyperion, A123 Company, or other-brand LiFePO4 cells which are recognized to be of good quality from well-known makers. Choose **LIFE** for *BATT TYPE*, for charging such cells.

Due to the nature of A123/LiFePO4 cells (wide divergence in cell voltages during charging) and due to the high rates at which some of these cells can be charged, one **MUST ALWAYS properly use the cell balancer function** whenever charging in LiFe Mode; failure to do so will result in poor pack performance at best, and damage to cells at worst. **Customers who charge in LiFe mode without balancer connected assume all risk of charger and battery failure!**

Number of LiFe Cells Wired in Series (Pack Voltage)					
1S 3.3V	2S 6.6V	3S 9.9V	4S 13.2V	5S 16.5V	6S 19.8V

Flow charts for LIFE functions are same as LIPO flow charts above, but show LIFE type instead

Store Mode is an important function to insure best performance from your lithium-based LiPo and LiFe batteries. We suggest using STORE whenever your batteries will be unused for a week or more. Connect your battery via both main wires and balance connector as during normal balance charging, but select STORE mode as shown in the LiPo flowchart above. The 0606i will then charge or discharge as needed such that approximately 60% of battery capacity remains at STORE END.

```

graph TD
    BATT_TYPE[BATT TYPE] --> CHARGE[Pb CHARGE  
C=4.0A 12Vpack]
    BATT_TYPE --> DISCHARGE[Pb DISCHARGE  
D=1.00A 12Vpack]
    
    CHARGE --> ENTER1[ENTER]
    DISCHARGE --> ENTER2[ENTER]
    
    ENTER1 --> INC1[INC]
    ENTER2 --> INC2[INC]
    
    INC1 --> DEC1[DEC]
    INC2 --> DEC2[DEC]
    
    DEC1 --> ENTER1
    DEC2 --> ENTER2
    
    ENTER1 --> START1[START]
    ENTER2 --> START2[START]
    
    START1 --> CHECK1[BATTERY CHECK  
WAIT PLEASE. . .]
    START2 --> CHECK2[BATTERY CHECK  
WAIT PLEASE. . .]
    
    CHECK1 -.-> DISPLAY1[CHG 0:00 00000  
Pb + 4.0A 12.000V]
    CHECK2 -.-> DISPLAY2[CHG 0:00 00000  
Pb - 1.0A 12.000V]
  
```

Adjust and find the desired charge current which ranges from 0.1A to 6.0A with INC & DEC buttons. Press the ENTER button to confirm setting

Select the proper total battery voltage to be charged or discharged with INC & DEC buttons – 2V, 4V, 6V, 8V, 10V, and 12V [2V per cell types only]

Adjust and find the desired discharge current from 0.10A to 1.00A (0.01A per step) with INC & DEC button. Press the ENTER button to confirm setting.

The flowchart illustrates the battery management system's logic, organized into three main columns separated by vertical dashed lines. Each column represents a different battery operation: Charge, Discharge, and Cycle.

Column 1: Charge Path

- Initial State:** BATT TYPE (BATTERY TYPE) leads to NiCd CHARGE (C=3.0A, 16.8V).
- Navigation:** From NiCd CHARGE, pressing **INC** leads to another NiCd CHARGE screen (C=3.00A, 16.8V), and pressing **DEC** leads to BATTERY CHECK WAIT PLEASE. . . .
- Execution:** Pressing **START** on the second NiCd CHARGE screen leads to the BATTERY CHECK WAIT PLEASE. . . . screen.
- Result:** After the check, the screen displays: CHG 0:00 00000, NC + 3.00A 16.800V.

Column 2: Discharge Path

- Initial State:** NiCd DISCHARGE (D=1.00A, 16.8V).
- Navigation:** From NiCd DISCHARGE, pressing **INC** leads to another NiCd DISCHARGE screen (D=1.00A, 16.8V), and pressing **DEC** leads to BATTERY CHECK WAIT PLEASE. . . .
- Execution:** Pressing **START** on the second NiCd DISCHARGE screen leads to the BATTERY CHECK WAIT PLEASE. . . . screen.
- Result:** After the check, the screen displays: DCH 0:00 00000, NC - 1.00A 16.800V.

Column 3: Cycle Path

- Initial State:** NiCd CYCLE D->C 5 (C=3.0A, D=1.00A).
- Navigation:** From NiCd CYCLE D->C 5, pressing **INC** leads to another NiCd CYCLE D->C 5 screen (C=3.0A, D=1.00A), and pressing **DEC** leads to BATTERY CHECK WAIT PLEASE. . . .
- Execution:** Pressing **START** on the second NiCd CYCLE D->C 5 screen leads to the BATTERY CHECK WAIT PLEASE. . . . screen.
- Result:** After the check, the screen displays: BATTERY CHECK WAIT PLEASE. . . .

Additional Features:

- Trickle and Delta-v settings:** A separate box on the right indicates that the next page contains settings for Trickle and Delta-v.
- Navigation:** The flowchart uses **INC** (Increase) and **DEC** (Decrease) buttons for navigation between screens.
- Execution:** The **START** button is used to initiate the battery operation.

NiCd CHARGE	
C=3.00A	16.8V

NiCd DISCHARGE	
D=1.00A	16.8V

NiCd DISCHARGE	
D=1.00A	16.8V

NiCd CYCLE C->D 5	
C=3.0A	D=1.00A

Setting charge current

Adjust and find the desired charge current which ranges from 0.1A to 6.0A with INC & DEC buttons. Press the ENTER button to confirm setting.

Setting discharge current

Adjust and find the desired discharge current, ranging from 0.1A to 1A, with INC & DEC buttons. Press the ENTER button to confirm setting. The 5W max may reduce the current you set depending on the voltage of your battery pack.

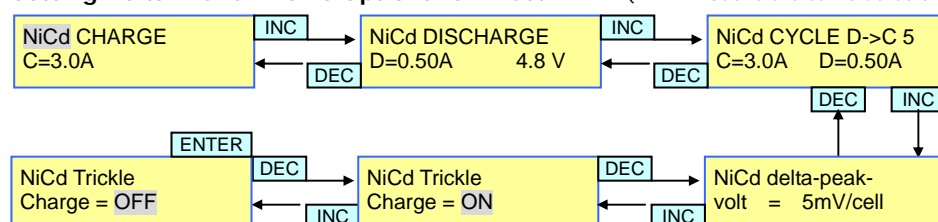
Setting discharge cutoff voltage

This is the voltage that the charger should stop discharging the battery. Adjust and find total discharge cutoff voltages to be discharged from 0.1V to 16.8V with INC & DEC buttons. Press the ENTER button to confirm setting.

Setting cycle

This is to set cycling with two options (Charge to Discharge / Discharge to Charge). Set cycling with INC & DEC buttons, and press the ENTER button to confirm setting.

Setting Delta-V and Trickle Options for NiCd/NiMH (NiMH mode is the same as below, except Mode shows 'NiMH')

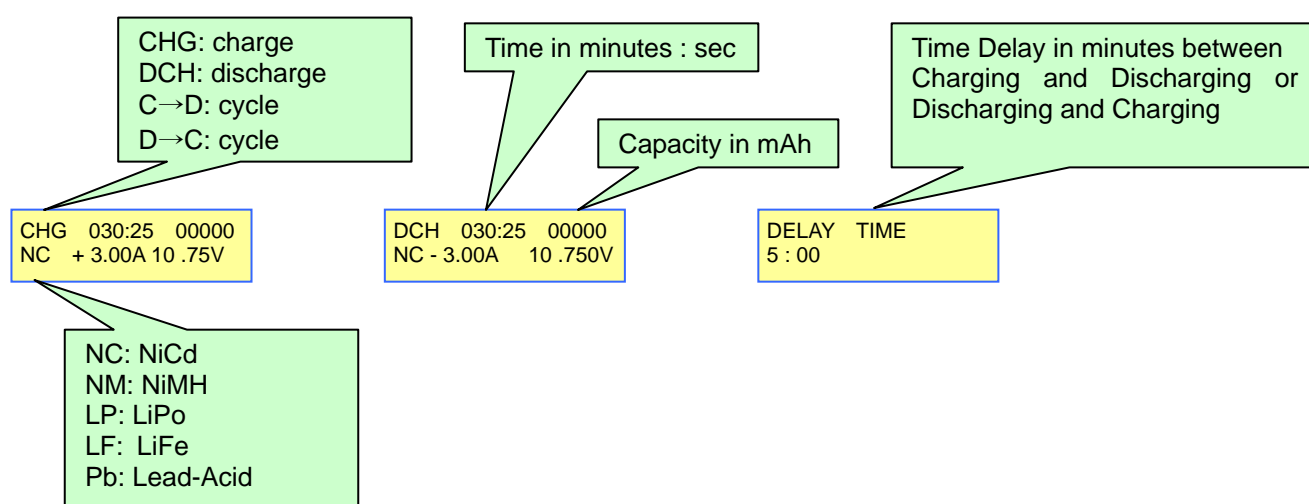


Delta-V Defaults (and minimum values) are: NiCd 5mV/cell, NiMH 3mV/cell. In most cases these should be left alone. Advanced users may wish to increase settings to archive a delayed charge termination, but if set to high can result in over-charge and could therefore be dangerous.

Trickle charge maintains a NiCd/NiMH battery charge until the battery is removed. Trickle rate depends on charge current setting and ranges from 50mA to 200mA. If charge current is <1A, there is no trickle. You can turn trickle such that it is always OFF, as shown above.

Displays during Charge, Discharge, and Cycle

Note that exact display may depend on type of battery and connection. For example, Lithium types when connected to a balancer will alternately show CHG / BLC at top left while charging, and CHG / BLC / END when finished charging. Also note that after charging the EOS0606i may apply maintenance current or discharge as needed to maintain balance until disconnected.



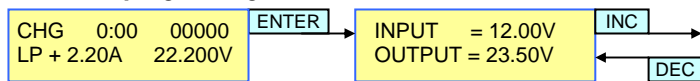
Completion Display

When the Enter button is pressed, charge or discharge will be stopped.

END	030:00	00000
NC	100mA	10.75V

In order to move back to the main display, press the Enter button.

Data Display – Keys

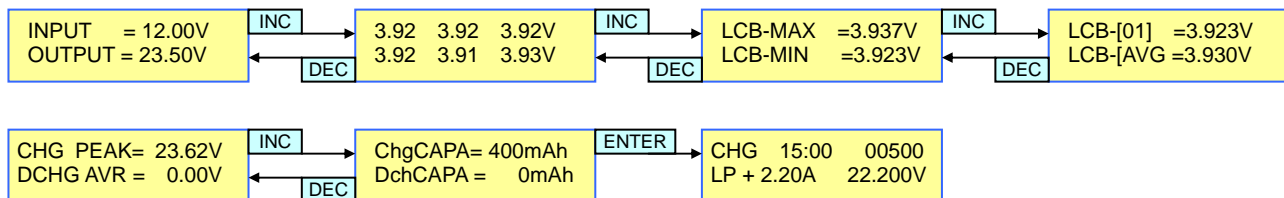


Press BATT TYPE during charging or discharging to view the data display menu.

Use INC and DEC to scroll through the data screens.

Pressing BATT TYPE again will return you to the charge/discharge screen.

Data Display – Screens (Example: During a Balancer-Connected Lithium Charge)



ERROR MESSAGES	
INPUT VOLTAGE ERROR	Input voltage is below 11.0V or exceeds 15.0V
NO BATTERY	Battery not detected
OUTPUT BATT REVERSE POLARITY	Battery is connected in reverse polarity to Output leads
OUTPUT CIRCUIT PROBLEM	Non-Specific Circuit error. Check battery condition
CHECK BATT OPEN CIRCUIT	Battery disconnected during charging
CHECK BATT OVER VOLTAGE	Battery voltage too high to match charger settings
CHECK BATT LOW VOLTAGE	Battery voltage too low to match charger settings
BALANCER VOLTAGE TOO HIGH	If voltage per cell is too high during balancing, this message may appear.
BALANCER VOLTAGE TOO LOW	If cell's voltage falls too low during balancing, this message may appear
DON'T CHARGE Lixx WITH THIS MODE	A Lithium pack is connected by balancer, but NiCd/NiMH/Pb mode is selected for charging

Note: If the incorrect number of cells is selected for a lithium type battery, and charging is begun, the charger may give error immediately and stop charging. In some cases, however, the charger will begin charging at the (lower) voltage it sees as correct, and watch all cells to confirm the incorrect setting. For example, if you connect a 3S pack but set the charger for 4S by mistake, the charger may begin by charging at 3S voltage level, and watch all cells. When the mistake is confirmed, the charger will give error and terminate. This is normal and correct behavior.

TROUBLESHOOTING

(1) Check again that the battery you are trying to charge and the settings on the EOS 0606i match. Battery type (such as NiMH or Lithium), battery capacity, number of cells (charge voltage), and charge rate must all be correct.

(2) Check that the input cable and output cables:

- *Have proper connectors in good condition
- *Are not frayed, worn, cut, or damaged
- *Are the proper gauge (2.5mm, 14ga or higher)
- *Are proper length – 20cm (8") on output side

(3) Attach the charger input connectors to a 12V automotive battery that is in good condition and fully charged. Wiggle the Terminal clips into the battery posts to insure that you have a good connection. Try the AC input if failing while using DC.

(4) Try another battery for charging. If your RC battery is in poor condition, **over discharged**, or in some other way defective the charger may correctly refuse to charge it based on safety algorithms.

(5) Try another RC battery type. For example switch to a NiMH battery if you are failing to charge Lithium types. Success with one type but failure with another generally indicates that the charger is working properly. The failing battery type is almost certainly in poor condition, then, or you have improperly set the charger for it.

(6) My LCD does not light, or lights but no characters are visible.

In most cases this happens when a charger has been dropped, or suffered some heavy vibration. The ribbon cable between LCD unit and charger can become loose. Have your dealer open the charger and re-seat the ribbon cable.

(7) Contact your dealer with full details and description of the problem, including the type of input power source, RC battery type and cell count, and history of the charger – specifically, has the charger been working properly before, or failing from new condition?

(8) I have an OUTPUT CIRCUIT ERROR

* Be sure that your **pack balance connector type**, polarity, and wiring system matches the multi-adapter attached to the charger.

* Carefully inspect pack connector, balance wire harness and Multi-Adapter for damage, wear, etc. If OK, then:

* Spray all connectors (including the one in charger) with de-oxide contact spray, then insert-remove connectors several times,
then spray one last time and re-connect.

* Use a solid DC PS or fully charged CAR battery for Input power (poor power supplies cause MANY problems...)

* Test charger using a lithium battery known to be in good condition.

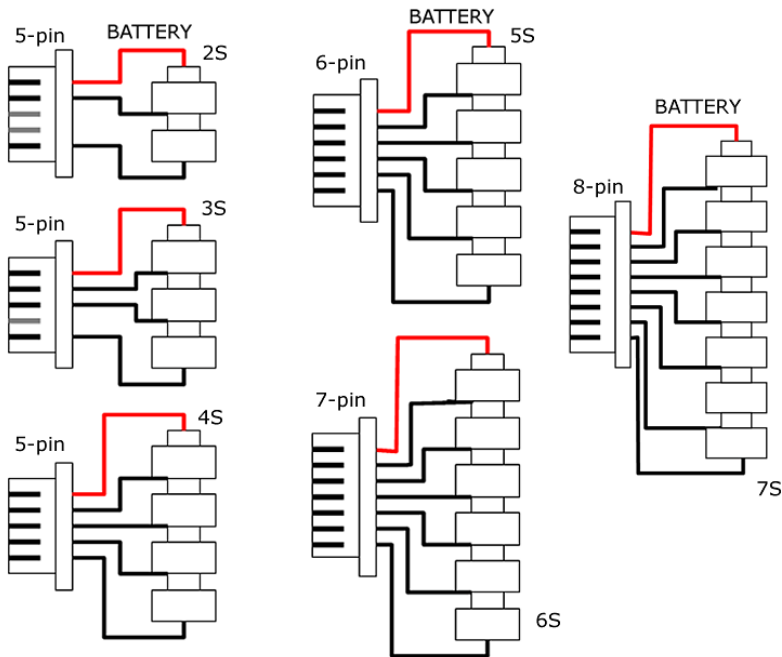
* Try a different brand battery (preferably with different balance connector and multi-adapter type)

NOTE: Many problem are from using the wrong balance adapter. For example XH type packs (such as Align) will fit in the HYPERION type adapter board, but will not charge properly. Check this list below. If your pack is either Hyperion or XH type, select the correct adapter from the two supplied with the charger. Otherwise you will need to order the correct option adapter (EH, TP/FP, or CellPro) for your pack.

IF YOUR PACK MAKER IS NOT LISTED BELOW, ASK THE MAKER WHICH BRAND BELOW IT MATCHES.

HP-EOSLBA-26XH-B	HP-EOSLBA-26HP-B	HP-EOSLBA-26TP-B	HP-EOSLBA-26EH-B
ALIGN	HYPERION	THUNDER POWER	KOKAM
DUALSKY	POLYQUEST	FLIGHTPOWER-EVO	GRAUPNER
E-FLIGHT	E-TEC	APEX	ROBBE
ELECTRIFLY	POLY RC	VISLERO	NEU
HEXTRONIC	XCITE	DANLIONS	APOGEE
COMMON SENSE V1	MAX AMPS	MPX	VAMPOWER
COMMON SENSE V2	TRUE RC		
ESKY	IMPULSE		
VENOM			
AIR THUNDER			
KONG THUNDER			
GRAYSON POWER			
TENERGY			
DN POWER			
MEGA POWER			
ELECTRIC POWER			
TURBORIX			
ENERGY EC, WOW RC			
IMAX			
FULLY MAX			
FUSION			

CONNECTOR WIRING FOR HYPERION and COMPATIBLE PACKS



WARRANTY

HYPERION Chargers are guaranteed to be free from defects in materials and workmanship for a period of one calendar year from date of purchase. Your selling dealer is your first point of contact for warranty issues. Return postage costs are the responsibility of the user in all cases. **You MUST Submit a copy of original receipt with the return.**

Damage due physical shock (dropping on the floor, etc), inappropriate power supply (automotive battery charger, etc!), water, moisture, and humidity are specifically NOT covered by warranty. Damage due to short circuit of live Positive Output lead to Charger Case is NOT covered, so be careful with exposed connectors.

It is well to carefully check your charger before making a return, as problems in setup, cabling, or power supply are much more common than defects in the charger.

Enjoy the Power!

The Hyperion Team